Refine Search

Search Results -

Terms	Documents
L10 not L11	2

Database: US Pre-Grant Publication Full-Text Database; US Patents Full-Text Database; US OCR Full-Text Database; EPO Abstracts Database; JPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

Search: L12

Refine Search | Recall Text | Clear | Interrupt

Search History

DATE: Monday, March 22, 2004 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=PGPB,USPT,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ		
L12	l10 not L11	2	L12
L11	L10 not l7	10	L11
L10	l1 same L9	12	L10
L9	volatil$8	329219	L9
L8	L7 not l6	6	L8
L7	l4 and l1	8	L7
L6	L4 same l1	2	L6
L5	L4	1270	L5
L4	l2 with L3	1270	L4
L3	interfacial	41027	L3
L2	microencapsul$8 or encapsul$8	194722	L2
	DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ		
	clomazon$1 or fenoxan or dimethazon$1 or fmc57020 or (fmc 57020) or		

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L1	gamit or ((chlorobenzyl or chlorophenylmethyl or (chlorophenyl methyl)) adj3 (dimethylisoxazolidin$3 or (dimethyl adj3 (isoxazolidin$3 or oxazolidin$3))))	994	L1

END OF SEARCH HISTORY

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Hit List

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Search Results - Record(s) 1 through 2 of 2 returned.

☐ 1. Document ID: US 5597780 A

Using default format because multiple data bases are involved.

L6: Entry 1 of 2 File: USPT Jan 28, 1997

US-PAT-NO: 5597780
DOCUMENT-IDENTIFIER: US 5597780 A

TITLE: Low volatility formulations of microencapsulated clomazone

DATE-ISSUED: January 28, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lee; Fui-Tseng H.	Princeton	NJ		
Nicholson; Paul	Trenton	NJ		

US-CL-CURRENT: 504/271; 504/359

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 2. Document ID: ES 2191067 T3, WO 9614743 A1, AU 9641613 A, ZA 9509724 A, US 5597780 A, EP 792100 A1, BR 9509694 A, CZ 9701416 A3, TW 321585 A, MX 9703575 A1, HU 77708 T, KR 97706728 A, JP 10509709 W, AU 696760 B, AU 9926990 A, IL 115975 A, AU 734106 B, EP 792100 B1, CN 1162902 A, DE 69529471 E, KR 357844 B, CA 2205440 C

L6: Entry 2 of 2 File: DWPI Sep 1, 2003

DERWENT-ACC-NO: 1996-259473
DERWENT-WEEK: 200365

TITLE: Prepn. of improved herbicidal clomazone compsns. - with reduced volatility and reduced movement from target area

INVENTOR: LEE, F H; NICHOLSON, P ; LEE, F T H ; LEE, F

PRIORITY-DATA: 1995US-0531499 (September 21, 1995), 1994US-0340699 (November 16, 1994)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC

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ES 2191067 T3	September 1, 2003		000	A01N025/28
WO 9614743 A1	May 23, 1996	E	033	A01N025/28
AU 9641613 A	June 6, 1996		000	A01N025/28
ZA 9509724 A	August 28, 1996		032	A01N000/00
US 5597780 A	January 28, 1997		010	A01N025/28
EP 792100 A1	September 3, 1997	E	000	A01N025/28
BR 9509694 A	October 14, 1997		000	A01N025/28
CZ 9701416 A3	December 17, 1997		000	A01N025/28
TW 321585 A	December 1, 1997		000	A01N025/04
MX 9703575 A1	August 1, 1997		000	A01N025/28
HU 77708 T	July 28, 1998		000	A01N025/28
KR 97706728 A	December 1, 1997		000	A01N025/28
JP 10509709 W	September 22, 1998		036	A01N043/80
AU 696760 B	September 17, 1998		000	A01N025/28
AU 9926990 A	July 8, 1999		000	A01N025/28
IL 115975 A	December 6, 2000		000	A01N025/28
AU 734106 B	June 7, 2001		000	A01N025/28
EP 792100 B1	January 22, 2003	E	000	A01N025/28
CN 1162902 A	October 22, 1997		000	A01N025/28
DE 69529471 E	February 27, 2003		000	A01N025/28
KR 357844 B	May 1, 2003		000	A01N025/28
CA 2205440 C	July 29, 2003	E	000	A01N025/28

734106 B INT-CL (IPC): A01 N 0/00; A01 N 25/04; A01 N 25/28; A01 N 43/48; A01 N 43/72; A01 N 43/80; C07 D 0/00

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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Search Results - Record(s) 1 through 6 of 6 returned.

☑ 1. Document ID: US 20030022791 A1

Using default format because multiple data bases are involved.

L8: Entry 1 of 6 File: PGPB Jan 30, 2003

PGPUB-DOCUMENT-NUMBER: 20030022791
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030022791 A1

TITLE: Method of microencapsulating an agricultural active having a high melting point and uses for such materials

PUBLICATION-DATE: January 30, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Asrar, Jawed	Chesterfield	MO	US	
Ding, Yiwei	St. Louis	MO	US	

US-CL-CURRENT: 504/116.1; 71/64.07

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 2. Document ID: US 20010019996 A1

L8: Entry 2 of 6 File: PGPB Sep 6, 2001

PGPUB-DOCUMENT-NUMBER: 20010019996
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010019996 A1

TITLE: PROCESS AND COMPOSITIONS PROMOTING BIOLOGICAL EFFECTIVENESS OF EXOGENOUS CHEMICAL SUBSTANCES IN PLANTS

PUBLICATION-DATE: September 6, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
SOULA, GERARD G.	MEYZIEUX	MO	FR	
MEYRUEIX, REMI	LYON	MO	FR	
LEMERCIER, ALAIN J.L.	ST. BONNET DE MURE	MO	FR	

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CAISSE, PHILIPPE G.	SAINT BONNET DE MURE	FR
WARD, ANTHONY J.I.	CLAYTON	US
GILLESPIE, JANE L.	ST. LOUIS	US
BRINKER, RONALD J.	ELLISVILLE	US

US-CL-CURRENT: 504/189; 424/405, 504/194, 504/199, 514/553, 514/661, 514/740

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 3. Document ID: US 6500783 B1

L8: Entry 3 of 6 File: USPT Dec 31, 2002

US-PAT-NO: 6500783
DOCUMENT-IDENTIFIER: US 6500783 B1

TITLE: Process and compositions promoting biological effectiveness of exogenous chemical substances in plants

DATE-ISSUED: December 31, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bryson; Nathan J.	Millery			FR
Soula; Olivier	Lyon			FR
Lemercier; Alain J. L.	St. Bonnet de Mure			FR
Meyrueix; Remi	Lyon			FR
Soula; Gerard G.	Meyzieux			FR

US-CL-CURRENT: 504/206; 504/362

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 4. Document ID: US 6133199 A

L8: Entry 4 of 6 File: USPT Oct 17, 2000

US-PAT-NO: 6133199
DOCUMENT-IDENTIFIER: US 6133199 A

TITLE: Process and compositions promoting biological effectiveness of exogenous chemical substances in plants

DATE-ISSUED: October 17, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Soula; Gerard G.	Meyzieux			FR
Meyrueix; Remi	Lyons			FR

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Lemercier; Alain J. L.	St Bonnet de Mure		FR
Bryson; Nathan J.	Millery		FR
Soula; Olivier	Lyons		FR
Ward; Anthony J. I.	Clayton	MO	
Gillespie; Jane L.	St. Louis	MO	
Brinker; Ronald J.	Ellisville	MO	

US-CL-CURRENT: 504/206; 504/365

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☑ 5. Document ID: US 5925464 A

L8: Entry 5 of 6 File: USPT Jul 20, 1999

US-PAT-NO: 5925464
DOCUMENT-IDENTIFIER: US 5925464 A

TITLE: Microencapsulation process and product

DATE-ISSUED: July 20, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mulqueen; Patrick Joseph	Oxon			GB
Smith; Geoff	Oxon			GB
Lubetkin; Steven D.	Zionsville	IN		

US-CL-CURRENT: 428/402.2; 264/4.1, 264/4.3, 264/4.32, 264/4.33, 264/4.6, 264/4.7, 427/213.3, 427/213.31, 427/213.32, 427/213.33, 427/213.34, 428/402.21, 428/402.24

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 6. Document ID: US 4936901 A

L8: Entry 6 of 6 File: USPT Jun 26, 1990

US-PAT-NO: 4936901
DOCUMENT-IDENTIFIER: US 4936901 A

TITLE: Formulations of water-dispersible granules and process for preparation thereof

DATE-ISSUED: June 26, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Surgant, Sr.; John M.	Ladue	MO		
Deming; John M.	Hazelwood	MO		

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US-CL-CURRENT: 504/133; 504/359

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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L7 not L6	6

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L8: Entry 1 of 6 File: PGPB Jan 30, 2003

DOCUMENT-IDENTIFIER: US 20030022791 A1
TITLE: Method of microencapsulating an agricultural active having a high melting point and uses for such materials

Summary of Invention Paragraph:
[0011] Another commonly used method for the encapsulation of liquid droplets involves the generation of a polyurea shell around an active-containing core by interfacial polymerization at the surface of the droplets. Advantages of using a polyurea shell include that the material is generally non-phytotoxic, its permeability characteristics can be controlled, and the shell can be formed at relatively low temperatures--in fact, polymerization temperatures of lower than. 90.degree. C. are almost always used, and temperatures of from about 40.degree. C.-70.degree. C., are preferred.

Summary of Invention Paragraph:
[0017] In U.S. Pat. No. 4,738,898, Vivant describes microencapsulation of a variety of materials within polyurea skin membranes by interfacial polyaddition involving a polyisocyanato hydrophobic liquid in an essentially aqueous medium. The polyisocyanato hydrophobic liquid contained the dissolved material to be encapsulated, an aliphatic diisocyanate and an isocyanurate ring trimer of an aliphatic diisocyanate. The isocyanate materials were reacted with a polyamine to form a polyurea shell material. The microcapsules described by Vivant had leakproof walls that were designed for the microencapsulation of colorants and the production of pressure-sensitive carbonless paper, for example. The microcapsules were designed to maintain the encapsulated material until the capsule was ruptured, and would not have been suitable for the controlled release of the encapsulated materials through the walls of the capsule.

Summary of Invention Paragraph:
[0092] The present invention is also directed to a novel method of producing a microencapsulated form of a high melting material which method is free of the use of solvents, the method comprising mixing a high melting material and a melting point depressant to form a composition which is free of solvents; heating the composition to a temperature at which the composition is a liquid, but which temperature is below the normal melting points of both the high melting material and the melting point depressant; forming the liquid composition into small droplets while maintaining said liquid composition at a temperature below the normal melting points of both the high melting material and the melting point depressant; and enclosing each droplet in a non-water soluble shell by interfacial polymerization to form a microcapsule.

Detail Description Paragraph:
[0110] In one embodiment, this disclosure describes the microencapsulation of a first agricultural active, such as silthiopham, in a polyurea shell, where the encapsulation is achieved by an interfacial polymerization process. Two processes are disclosed for preparing the emulsion necessary for the interfacial polymerization, one involves encapsulation of the active in solution in a non-aromatic organic solvent and the other involves encapsulation of a blend of the active and a melting point depressant.

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Detail Description Paragraph:
[0113] One embodiment of the present invention advantageously extends the state of the art to include the encapsulation of almost any high melting solid by a method that includes interfacial polymerization, but without the necessity of using a solvent to dissolve the high melting solid. In U.S. Pat. No. 5,310,721, to Lo, it is taught that microcapsules prepared by interfacial polycondensation can advantageously contain materials which have a variety of uses, such as for dyes, inks, color formers, pharmaceuticals, cosmetics, flavoring materials, agricultural chemicals, and the like. The Lo patent states that any liquid, oil, low melting solid, or solvent-soluble material into which a first wall-forming material can be dissolved and which is non-reactive with said wall-forming material may be encapsulated with this technique.

Detail Description Paragraph:
[0114] The present invention extends the state of the art to include the encapsulation of almost any high melting solid by forming a mixture of the high melting solid with a melting point depressant that is a solid at conventional interfacial polymerization temperatures (for polyurea formation, this is about 50.degree. C.-90.degree. C.), but is capable of combining with the high melting solid to form a eutectic mixture, where the melting point of the eutectic mixture is sufficiently low to permit the mixture to be encapsulated by known interfacial polymerization techniques, such as referred to in the Lo patent. It is preferable, but not required, that the melting point depressant is a material of the same type as the high melting solid. For example, it is particularly advantageous when both are dyes, inks, pharmaceuticals, flavoring materials, agricultural chemicals, and the like.

Detail Description Paragraph:
[0115] As used herein, a "material having a high normal melting point", which is also referred to herein as a "high melting material", is a material which has a normal melting point temperature that is higher than the upper limit of the temperature range that is conventionally used to carry out the interfacial polymerization method that is being used to form the encapsulating shell around the material. For example, when the interfacial polymerization method comprises the formation of a polyurea shell, the preferred temperature range that is conventionally used is about 50.degree. C. to about 90.degree. C., more preferably, about 50.degree. C. to about 80.degree. C., even more preferably, about 50.degree. C. to about 70.degree. C., and yet more preferably, about 50.degree. C. to about 60.degree. C. Therefore, a high melting material, in this instance, is one having a normal melting point that is above 90.degree. C., or above the upper limit of another of the preferred ranges.

Detail Description Paragraph:
[0240] amitrole, clomazone and fluridone,

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L8: Entry 2 of 6 File: PGPB Sep 6, 2001

DOCUMENT-IDENTIFIER: US 20010019996 A1
TITLE: PROCESS AND COMPOSITIONS PROMOTING BIOLOGICAL EFFECTIVENESS OF EXOGENOUS CHEMICAL SUBSTANCES IN PLANTS

Summary of Invention Paragraph:
[0026] A different approach, illustrated in European Patent Specification No. 0 148 169, is to encapsulate a water-soluble herbicide such as glyphosate in a polymeric shell by interfacial polycondensation. In this technique, a water-in-oil emulsion having a lipophilic emulsifier based on alkylated polyvinylpyrrolidone is used. Polymerization to form the shell, by reaction of comonomers, occurs at the oil-water interface of the emulsion containing the herbicide, resulting in formation of a shell that encapsulates the herbicide.

Brief Description of Drawings Paragraph:
[0163] For example, more than one exogenous chemical substance can be included. An additional anionic exogenous chemical substance can be included, selected for example from those hereinbefore listed. Alternatively or in addition, an exogenous chemical substance that is other than anionic as defined herein can be included. For example, a glyphosate composition of the invention can optionally contain, in addition to glyphosate, an anionic herbicidal compound such as acifluorfen, asulam, benazolin, bentazon, bialaphos, clopyralid, 2,4-D, 2,4-DB, dalapon, dicamba, dichlorprop, diclofop, fenoxaprop, flamprop, fluazifop, fluoroglycofen, fluroxypyr, fomesafen, fosamine, glufosinate, haloxyfop, imazameth, imazamethabenz, imazamox, imazapic, imazapyr, imazaquin, imazethapyr, MCPA, MCPB, mecoprop, methylarsonic acid, nonanoic acid, picloram, sulfamic acid, 2,3,6-TBA, TCA and triclopyr. Such additional anionic compound is present as salt(s) comprising A.sup.+, and optionally B.sup.+, cations as described herein. Similarly, a composition of the invention containing salts of an anionic herbicide can optionally contain a herbicidal compound that is other than anionic, such as for example an ester derivative of an anionic herbicide, or a herbicide selected from acetochlor, aclonifen, alachlor, ametryn, amidosulfuron, anilofos, atrazine, azafenidin, azimsulfuron, benfluralin, benfuresate, bensulfuron-methyl, bensulide, benzofenap, bifenox, bromobutide, bromofenoxim, butachlor, butamifos, butralin, butroxydim, butylate, cafenstrole, carbetamide, carfentrazone-ethyl, chlomethoxyfen, chlorbromuron, chloridazon, chlorimuron-ethyl, chlorotoluron, chlornitrofen, chlorotoluron, chlorpropham, chlorsulfuron, chlorthal-dimethyl, chlorthiamid, cinmethylin, cinosulfuron, clethodim, clodinafop-propargyl, clomazone, clomeprop, cloransulam-methyl, cyanazine, cycloate, cyclosulfamuron, cycloxydim, cyhalofop-butyl, daimuron, desmedipham, desmetryn, dichlobenil, diclofop-methyl, diflufenican, dimefuron, dimepiperate, dimethachlor, dimethametryn, dimethenamid, dinitramine, dinoterb, diphenamid, dithiopyr, diuron, EPTC, esprocarb, ethalfluralin, ethametsulfuron-methyl, ethofumesate, ethoxysulfuron, etobenzanid, fenoxaprop-ethyl, fenuron, flamprop-methyl, flazasulfuron, fluazifop-butyl, fluchloralin, flumetsulam, flumiclorac-pentyl, flumioxazin, fluometuron, fluorochloridone, fluoroglycofen-ethyl, flupoxam, flurenol, fluridone, fluroxypyr-1-methylheptyl, flurtamone, fluthiacet-methyl, fomesafen, halosulfuron, haloxyfop-methyl, hexazinone, imazosulfuron, indanofan, isoproturon, isouron, isoxaben, isoxaflutole, isoxapyrifop, lactofen, lenacil, linuron, mefenacet, metamitron, metazachlor, methabenzthiazuron, methyldymron, metobenzuron, metobromuron, metolachlor, metosulam, metoxuron, metribuzin, metsulfuron, molinate, monolinuron,

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naproanilide, napropamide, naptalam, neburon, nicosulfuron, norflurazon, orbencarb, oryzalin, oxadiargyl, oxadiazon, oxasulfuron, oxyfluorfen, pebulate, pendimethalin, pentanochlor, pentoxazone, phenmedipham, piperophos, pretilachlor, primisulfuron, prodiamine, prometon, prometryn, propachlor, propanil, propaquizafop, propazine, propham, propisochlor, propyzamide, prosulfocarb, prosulfuron, pyraflufen-ethyl, pyrazolynate, pyrazosulfuron-ethyl, pyrazoxyfen, pyributicarb, pyridate, pyriminobac-methyl, quinclorac, quinmerac, quizalofop-ethyl, rimsulfuron, sethoxydim, siduron, simazine, simetryn, sulcotrione, sulfentrazone, sulfometuron, sulfosulfuron, tebutam, tebuthiuron, terbacil, terbumeton, terbuthylazine, terbutryn, thenylchlor, thiazopyr, thifensulfuron, thiobencarb, tiocarbazil, tralkoxydim, triallate, triasulfuron, tribenuron, trietazine, trifluralin, triflusulfuron and vemolate.

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L8: Entry 3 of 6 File: USPT Dec 31, 2002

DOCUMENT-IDENTIFIER: US 6500783 B1
TITLE: Process and compositions promoting biological effectiveness of exogenous chemical substances in plants

Brief Summary Text (28):
A different approach, illustrated in European Patent Specification No. 0 148 169, is to encapsulate a water-soluble herbicide such as glyphosate in a polymeric shell by interfacial polycondensation. In this technique, a water-in-oil emulsion having a lipophilic emulsifier based on alkylated polyvinylpyrrolidone is used. Polymerization to form the shell, by reaction of comonomers, occurs at the oil-water interface of the emulsion containing the herbicide, resulting in formation of a shell that encapsulates the herbicide.

Brief Summary Text (146):
For example, more than one exogenous chemical substance can be included. An additional anionic exogenous chemical substance can be included, selected for example from those hereinbefore listed. Alternatively or in addition, an exogenous chemical substance that is other than anionic as defined herein can be included. For example, a glyphosate composition of the invention can optionally contain, in addition to glyphosate, an anionic herbicidal compound such as acifluorfen, asulam, benazolin, bentazon, bialaphos, carfentrazone, clopyralid, 2,4-D, 2,4-DB, dalapon, dicamba, dichlorprop, diclofop, fenoxaprop, flamprop, fluazifop, fluoroglycofen, fluroxypyr, fomesafen, fosamine, glufosinate, haloxyfop, imazameth, imazamethabenz, imazamox, imazapic, imazapyr, imazaquin, imazethapyr, MCPA, MCPB, mecoprop, methylarsonic acid, nonanoic acid, picloram, sulfamic acid, 2,3,6-TBA, TCA and triclopyr. Such additional anionic compound is present as salt(s) comprising [A.sup.n+], and optionally [B.sup.+], cations as described herein. Similarly, a composition of the invention containing salts of an anionic herbicide can optionally contain a herbicidal compound that is other than anionic, such as for example an ester derivative of an anionic herbicide, or a herbicide selected from acetochlor, aclonifen, alachlor, ametryn, amidosulfuron, anilofos, atrazine, azafenidin, azimsulfuron, benfluralin, benfuresate, bensulfuron-methyl, bensulide, benzofenap, bifenox, bromobutide, bromofenoxim, butachlor, butamifos, butralin, butroxydim, butylate, cafenstrole, carbetamide, carfentrazone-ethyl, chlomethoxyfen, chlorbromuron, chloridazon, chlorimuron-ethyl, chlorotoluron, chlornitrofen, chlorotoluron, chlorpropham, chlorsulfuron, chlorthal-dimethyl, chlorthiamid, cinmethylin, cinosulfuron, clethodim, clodinafop-propargyl, clomazone, clomeprop, cloransulam-methyl, cyanazine, cycloate, cyclosulfamuron, cycloxydim, cyhalofop-butyl, daimuron, desmedipham, desmetryn, dichlobenil, diclofop-methyl, diflufenican, dimefuron, dimepiperate, dimethachlor, dimethametryn, dimethenamid, dinitramine, dinoterb, diphenamid, dithiopyr, diuron, EPTC, esprocarb, ethalfluralin, ethametsulfuron-methyl, ethofumesate, ethoxysulfuron, etobenzanid, fenoxaprop-ethyl, fenuron, flamprop-methyl, flazasulfuron, fluazifop-butyl, fluchloralin, flumetsulam, flumiclorac-pentyl, flumioxazin, fluometuron, fluorochloridone, fluoroglycofen-ethyl, flupoxam, flurenol, fluridone, fluroxypyr-1-methylheptyl, flurtamone, fluthiacet-methyl, fomesafen, halosulfuron, haloxyfop-methyl, hexazinone, imazosulfuron, indanofan, isoproturon, isouron, isoxaben, isoxaflutole, isoxapyrifop, lactofen, lenacil, linuron, mefenacet, metamitron, metazachlor, methabenzthiazuron, methyldymron, metobenzuron, metobromuron, metolachlor, metosulam, metoxuron, metribuzin,

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metsulfuron, molinate, monolinuron, naproanilide, napropamide, naptalam, neburon, nicosulfuron, norflurazon, orbencarb, oryzalin, oxadiargyl, oxadiazon, oxasulfuron, oxyfluorfen, pebulate, pendimethalin, pentanochlor, pentoxazone, phenmedipham, piperophos, pretilachlor, primisulfuron, prodiamine, prometon, prometryn, propachlor, propanil, propaquizafop, propazine, propham, propisochlor, propyzamide, prosulfocarb, prosulfuron, pyraflufen-ethyl, pyrazolynate, pyrazosulfuron-ethyl, pyrazoxyfen, pyributicarb, pyridate, pyriminobac-methyl, quinclorac, quinmerac, quizalofop-ethyl, rimsulfuron, sethoxydim, siduron, simazine, simetryn, sulcotrione, sulfentrazone, sulfometuron, sulfosulfuron, tebutam, tebuthiuron, terbacil, terbumeton, terbuthylazine, terbutryn, thenylchlor, thiazopyr, thifensulfuron, thiobencarb, tiocarbazil, tralkoxydim, triallate, triasulfuron, tribenuron, trietazine, trifluralin, triflusulfuron and vernolate.

L8: Entry 5 of 6 File: USPT Jul 20, 1999

DOCUMENT-IDENTIFIER: US 5925464 A
TITLE: Microencapsulation process and product

Abstract Text (1):
Microencapsulated compositions, useful, for example, as pesticidal formulations, were prepared a process in which the microcapsules containing the encapsulated material are formed in an interfacial polycondensation reaction carried out in the presence of one polyvinylalcohol, a different polyvinylalcohol is added, and the resulting mixture is spray dried.

Brief Summary Text (6):
U.S. Pat. No. 4,936,901 (Monsanto) discloses an alternative method of encapsulation, in which microcapsules containing the active material are formed by means of an interfacial polycondensation reaction, involving an isocyanate/polyamine reaction. The resulting interfacially polymerised microcapsules are subsequently spray dried. This reference mentions that PVA may be used as a suspension adjuvant in the spray drying step. Again, this method results in the production of microcapsules with uncontrollable release characteristics. Also, some active materials show a tendency to diffuse out of the interfacially polymerised microcapsules during storage, thus producing crystallisation (in the case of actives normally solid at ambient temperatures). Another difficulty with this method is that the products which result all have slow release characteristics, because of their large particle size distribution and thick polymer wall.

Brief Summary Text (9):
We have found by incorporating a PVA into an interfacial polycondensation system for producing microcapsules, and subsequently spray drying the resulting microcapsules in the presence of the PVA and optionally a further quantity of PVA which may be the same or different from the one adopted in the microencapsulation step, microcapsules can be obtained which show improved storage stability, especially to the leaching of the active material from the resulting microcapsules, particularly when the microcapsules are small in size, (for example less than 5 micrometer).

Brief Summary Text (10):
Accordingly, in a first embodiment of the invention, there is provided a process for preparing an encapsulated material, which process comprises forming microcapsules containing the material by an interfacial polycondensation reaction, and spray drying the resulting microcapsules in the presence of a polyvinylalcohol (PVA), wherein the PVA is present during the interfacial polycondensation reaction forming the microcapsules.

Brief Summary Paragraph Table (1):
_____ amitraz phosalone azinphos-ethyl phosfolan azinphos-methyl phosmet benzoximate promnecarb bifenthrin quinalphos binapacryl resmethrin bioresmethrin temephos chlorpyrifos tetramethrin chlorpyrifos-methyl xylylcarb cyanophos acrinathrin cyfluthrin allethrin cypermethrin benfuracarb bromophos bioallethrin bromopropylate bioallethrin S butacarboxim bioresmethrin butoxycarboxin buprofezin chlordimeform chlorfenvinphos chlorobenzilate

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chlorflurazuron chloropropylate chlormephos chlorophoxim cycloprothrin fenamiphos betacyfluthrin fenobucarb cyhalothrin gamma-HCH cambda-cyhalothrin methidathion alpha-cypermethrin deltamethrin beta-cypermethrin dicofol cyphenothrin dioxabenzafos dimeton-S-methyl dioxacarb dichlorvos endosulfan disulfoton EPNethiofencarb edifenphos dinobuton empenthrin tetradifon esfenvalerate tralomethrin ethoprophos N-2,3-dihydro-3-methyl-1,3 etofenprox thiazol-2-ylidene-2,4- etrimphos xylidene fenazaquin parathion methyl fenitrothion fenthiocarb phenothrin fenpropathrin phenthoate fenthion pirimiphos-ethyl fenvalerate pirimiphos-methyl flucythrinate profenofos flufenoxuron propaphos tau-fluvalinate propargite formothion propetamphospyrachlofos hexaflumuron tefluthrin hydroprene terbufos isofenphos tetrachlorinphos isoprocarb tralomethrin isoxathion triazophos malathion pyrachlofos mephospholan tefluthrin methoprene terbufos methoxychlor tetrachlorinphos mevinphos tralomethrin permethrin triazophos the following fungicides:- benalaxyl biteranol bupirimate cyproconazole carboxin tetraconazole dodemorph difenoconazole dodine dimethomorph fenarimol diniconazole ditalimfos ethoxyquin myclobutanil etridiazole nuarimol fenpropidin oxycarboxin fluchloralin penconazole flusilazole prochloraz imibenconazole tolclofos-methyl myclobutanil triadimefon propiconazole triadimenol pyrifenox azaconazole tebuconazole epoxyconazole tridemorph fenpropimorph triflumizole the following herbicides:- 2,4-D esters bifenox 2,4-DB esters bromoxynil esters acetochlor bromoxynil aclonifen butachlor alachlor butamifos anilophos butralin benfluralin butylate benfuresate carbetamide bensulide chlomitrofen benzoylprop-ethyl chlorpropham cinmethylin flurochloralin haloxyfop clethodim ethoxyethyl clomazone haloxyfop-methyl clopyralid esters ioxynil esters CMPP esters isopropalin cycloate MCPA esters cycloxydim mecoprop-P esters desmedipham metolachlor dichlorprop esters monalide diclofop-methyldiethatyl napropamide dimethachlor nitrofen dinitramine oxadiazon ethalfluralin oxyfluorfen ethofumesate pendimethalin fenobucarb phenisopham fenoxaprop ethyl phenmedipham fluazifop picloram esters fluazifop-P pretilachlor fluchloralin profluralin flufenoxim propachlor flumetralin propanil flumetralin propaquizafop fluorodifen pyridate fluoroglycofen ethyl quizalofop-P fluoroxypyr esters triciopyr esters flurecol butyl tridiphane trifluralin

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CLAIMS:

1. A process for preparing an encapsulated material, which process comprises forming microcapsules containing the material by an interfacial polycondensation reaction carried out in the presence of a first polyvinylalcohol, adding a second polyvinyl alcohol, and spray drying the resulting mixture, with the proviso that said first polyvinylalcohol and second polyvinylalcohol are different.

14. Microcapsules containing an encapsulated material obtained by a process which comprises forming microcapsules by an interfacial polycondensation reaction carried out in the presence of a first polyvinylalcohol, adding a second polyvinylalcohol, and spray drying the resulting mixture, with the proviso that said first polyvinylalcohol and second polyvinylalcohol are different.

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L8: Entry 6 of 6 File: USPT Jun 26, 1990

DOCUMENT-IDENTIFIER: US 4936901 A
TITLE: Formulations of water-dispersible granules and process for preparation thereof

Brief Summary Text (7):
Various methods are known in the art for microencapsulation of water-insoluble pesticides via interfacial polymerization reaction. U.S. Pat. Nos. 4,360,376, 3,429,827, 3,577,515 and 4,280,833 provide a good summary of the methods which are available. U.S. Pat. No. 4,280,833 describes the microencapsulation of concentrated amounts of water-insoluble pesticide materials on the order of 480-700 grams per liter, this previously unattainable high concentration offers a distinct energy saving advantage when water driveoff is required to convert the liquid to a solid.

Brief Summary Text (61):
There are several techniques known for micro-encapsulating pesticide materials; see for example MICROENCAPSULATION PROCESSES AND APPLICATIONS edited by Jan E. Vandegaer, 1974 Plenum Press, New York and London. Such processes include coacervation encapsulation, interfacial condensation polymerization, and fluid bed coating. The preferred method for use herein is interfacial polycondensation microencapsulation and especially the process described by U.S. Pat. No. 4,280,833 as well as Ser. No. 619,752 filed June 12, 1984, Ser. No. 655,827 filed Oct. 1, 1984, and Ser. No. 566,108 filed Dec. 27, 1983, all of which describe encapsulation of concentrated amounts of water-insoluble pesticides, i.e., greater than 480 grams of water-insoluble material per liter of total composition. High concentration microencapsulation is achieved by use of specific emulsifiers and these higher starting concentrations are of both energy and process benefit in accomplishing a dry product.

Brief Summary Text (62):
Briefly, microencapsulation via interfacial condensation polymerization reaction involves encapsulating a water-immiscible material within a shell wall of polycondensate, e.g., polyurea, polyamide, polysulfonamide, polyester, polycarbonate, or polyurethane by (1) providing an aqueous solution containing an emulsifier capable of forming a stable oil-in-water emulsion when concentrated amounts of discontinuous phase liquid are present vis-a-vis the continuous or aqueous phase liquid; (2) forming an organic or discontinuous phase liquid which consists essentially of the water-insoluble pesticide or plant growth regulant (the material to be encapsulated) with a first shell wall monomer dissolved therein; (3) addition of the discontinuous liquid to the aqueous phase, with agitation, to form a dispersion of small droplets discontinuous phase liquid throughout the aqueous phase i.e., an oil-in-water emulsion is formed); (4) addition of a second water-miscible shell wall monomer, with continued agitation, to the oil-in-water emulsion; and (5) reaction of the second shell wall monomer with the first shell wall monomer to form a polymeric shell wall about the water-insoluble pesticide.

Brief Summary Text (65):
The water-insoluble pesticide(s) which is the active agent of the water-dispersible granule of the invention and which is encapsulated is suitably any liquid, oil,

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meltable solid, solvent-soluble, or copesticide-soluble active ingredient, into which the first shell wall monomer can be dissolved and which is non-reactive thereto. Such water-immiscible pesticides include as representative herbicides, e.g., .alpha.-chloro-2',6'-diethyl-N-methoxymethyl acetanilide (commonly known as alachlor), N-butoxymethyl-.alpha.-chloro-2',6'-diethylacetanilide (commonly known as butachlor), 2'-methyl-6'-ethyl-N-(1-methoxy-prop-2-yl)-2-chloroacetanilide (commonly known as metolachlor), 2'-t-butyl-2-chloro-N-methoxymethyl-6'-methylacetanilide, .alpha.-chloro-N-(2-methoxy-6-methylphenyl)-N-(1-methylethoxymethyl)-aceta mide, .alpha.-chloro-N-(ethoxy-methyl)-N-[2-methyl-6-(trifluoro-methyl)phenyl]-a cetamide, .alpha.-chloro-N-methyl-N-[2-methyl-6-(3-methylbutoxy) phenyl] acetamide, .alpha.-chloro-N-methyl-N-(2-methyl-6-propoxyphenyl)acetamide, N-(2-butoxy-6-methylphenyl)-.alpha.-chloro-N-methyl acetamide, N-(2,6-dimethylphenyl)-N-(1-pyrazolylmethyl)chloroacetanilide (common name "metazochlor"), N,N-diallyl-2-chloroacetamide (common name "allidochlor"), isobutyl ester of (2,4-dichlorophenoxy)acetic acid, 2-chloro-N-(ethoxymethyl)-6'-ethyl-o-acetotoluidide (commonly known as acetochlor), 1-(1-cyclohexen-1-yl)-3-(2-fluorophenyl)-1-methyl urea, S-2,3,3-trichloroallyldiisopropyl thiocarbamate (commonly known as "triallate"), S-2,3-dichloroallyldiisopropylthiocarbamate (commonly known as "diallate"), .alpha.,.alpha.,.alpha.-trifluoro-2, 6-dinitro-N,N-dipropyl-p-toluidine (commonly known as " trifluralin"), 2-(2-chlorophenyl)methyl-4,4-dimethyl-3-isoxazolidinone; 3,5-pyridinedicarbothioc acid, 2-(difluoromethyl)-4-(2-methylpropyl)-6-(trifluoromethyl)-, S,S-dimethylester; 3-pyridinecarboxylic acid, 2-(difluoromethyl)-5-(4,5-dihydro-2-thiazolyl)-4-(2-methylpropyl)-6-(trifl uoromethyl)-, methyl ester; 3-pyridinecarboxylic acid, 2-(difluoromethyl)-4-(2-methylpropyl)-5-(1H-pyrazol-1-ylcarbonyl)-6-triflu oromethyl)-, methyl ester; 5-methyl-4-methoxycarbonyl-3-(3'-methoxycarbonylphenoxy)-pyrazole and 5-methyl-4-methoxycarbonyl-3-(3'-methoxyphenoxy) pyrazole.

Brief Summary Text (95):
In the interfacial condensation encapsulation process used herein, the water-insoluble pesticide containing the first shell wall monomer dissolved therein comprises the organic or discontinuous phase liquid. The water-immiscible pesticide acts as the solvent for the first shell wall monomer thus avoiding the use of other water-immiscible organic solvents and allowing for a concentrated amount of water-insoluble pesticide in the final encapsulated product. The water-insoluble pesticide and first shell wall component are pre-mixed to obtain a homogeneous discontinuous phase liquid before addition to, and emulsification in, the aqueous phase to form the oil-in-water emulsion.

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☑ 1. Document ID: US 20030224031 A1

Using default format because multiple data bases are involved.

L11: Entry 1 of 10 File: PGPB Dec 4, 2003

PGPUB-DOCUMENT-NUMBER: 20030224031
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030224031 A1

TITLE: Delivery system for pesticides and crop-yield enhancement products using micro-encapsulated active ingredients in extruded granules

PUBLICATION-DATE: December 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Heier, John L.	Live Oak	CA	US	
Schulteis, David T.	Fresno	CA	US	

US-CL-CURRENT: 424/408; 71/31

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☑ 2. Document ID: US 20010041659 A1

L11: Entry 2 of 10 File: PGPB Nov 15, 2001

PGPUB-DOCUMENT-NUMBER: 20010041659
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010041659 A1

TITLE: Microencapsulated clomazone in the presence of fat and resin

PUBLICATION-DATE: November 15, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Becker, John M.	Flemington	NJ	US	
Szamosi, Janos	Washington	NJ	US	
Garcia, Hylsa E.	Elizabeth	NJ	US	

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US-CL-CURRENT: 504/140

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 3. Document ID: US 6440902 B1

L11: Entry 3 of 10 File: USPT Aug 27, 2002

US-PAT-NO: 6440902
DOCUMENT-IDENTIFIER: US 6440902 B1
**** See image for Certificate of Correction ****

TITLE: Combination of two or more active ingredients using microencapsulated formulations

DATE-ISSUED: August 27, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Szamosi; Janos	Washington	NJ		

US-CL-CURRENT: 504/138; 504/139

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☑ 4. Document ID: US 6380133 B2

L11: Entry 4 of 10 File: USPT Apr 30, 2002

US-PAT-NO: 6380133
DOCUMENT-IDENTIFIER: US 6380133 B2

TITLE: Microencapsulated clomazone in the presence of fat and resin

DATE-ISSUED: April 30, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Becker; John M.	Flemington	NJ		
Szamosi; Janos	Washington	NJ		
Garcia; Hylsa E.	Elizabeth	NJ		

US-CL-CURRENT: 504/140; 504/265

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☑ 5. Document ID: US 6218339 B1

L11: Entry 5 of 10 File: USPT Apr 17, 2001

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US-PAT-NO: 6218339
DOCUMENT-IDENTIFIER: US 6218339 B1

TITLE: Microencapsulated clomazone in the presence of fat and resin

DATE-ISSUED: April 17, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Becker; John M.	Flemington	NJ		
Szamosi; Janos	Washington	NJ		
Garcia; Hylsa E.	Elizabeth	NJ		

US-CL-CURRENT: 504/140; 504/265

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 6. Document ID: US 5783520 A

L11: Entry 6 of 10 File: USPT Jul 21, 1998

US-PAT-NO: 5783520
DOCUMENT-IDENTIFIER: US 5783520 A

TITLE: Microencapsulated herbicidal compositions comprising clomazone and edible oils

DATE-ISSUED: July 21, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Anderson; Helen L.	St. Charles	MO		
Hakimi; Salim M.	Chesterfield	MO		
Lundstedt; Alan P.	Cincinnati	OH		
Powers; Tracy A.	Breckenridge Hills	MO		
Rao; Sudabathula	St. Louis	MO		
Stern; Alan J.	Hamilton	NJ		

US-CL-CURRENT: 504/140; 504/271

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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☐ 7. Document ID: US 5583090 A

L11: Entry 7 of 10 File: USPT Dec 10, 1996

US-PAT-NO: 5583090
DOCUMENT-IDENTIFIER: US 5583090 A

TITLE: Herbicidal microencapsulated clomazone compositions with reduced vapor

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DATE-ISSUED: December 10, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stern; Alan J.	Defiance	MO		
Lundstedt; Alan P.	Cincinnati	OH		
Hakimi; Salim M.	Chesterfield	MO		
Rao; Sudabathula	St. Louis	MO		

US-CL-CURRENT: 504/140; 504/271, 504/359

Full | Title | Citation | Front | Review | Classification | Date | Reference | References | Attachments | Claims | KWMC | Draw De

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☑ 8. Document ID: US H000806 H

L11: Entry 8 of 10 File: USPT Aug 7, 1990

US-PAT-NO: H000806
DOCUMENT-IDENTIFIER: US H000806 H

TITLE: Herbicidal clomazone compositions and methods of use tolerant to corn and other crops

DATE-ISSUED: August 7, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Keifer; David W.	Skillman	NJ		
Tymonko; John M.	Hamilton Square	NJ		
Felix; Earl D.	Trenton	NJ		
Van Saun; William A.	Titusville	NJ		

US-CL-CURRENT: 504/108; 504/100, 504/134, 504/136, 504/137, 504/138, 504/139

Full | Title | Citation | Front | Review | Classification | Date | Reference | References | Attachments | Claims | KWMC | Draw De

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☐ 9. Document ID: US 4822401 A

L11: Entry 9 of 10 File: USPT Apr 18, 1989

US-PAT-NO: 4822401
DOCUMENT-IDENTIFIER: US 4822401 A

TITLE: Safening of herbicidal clomazone applications with organophosphorus compounds

DATE-ISSUED: April 18, 1989

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INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tymonko; John M.	Hamilton Square	NJ		

US-CL-CURRENT: 504/103; 504/112

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 10. Document ID: US 4405357 A

L11: Entry 10 of 10 File: USPT Sep 20, 1983

US-PAT-NO: 4405357
DOCUMENT-IDENTIFIER: US 4405357 A

TITLE: Herbicidal 3-isoxazolidinones and hydroxamic acids

DATE-ISSUED: September 20, 1983

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chang; Jun H.	Lockport	NY		

US-CL-CURRENT: 504/271; 548/243, 549/419, 549/434, 556/417, 558/413, 558/414, 558/416, 560/312, 562/621, 562/623

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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L11: Entry 1 of 10 File: PGPB Dec 4, 2003

DOCUMENT-IDENTIFIER: US 20030224031 A1
TITLE: Delivery system for pesticides and crop-yield enhancement products using micro-encapsulated active ingredients in extruded granules

Summary of Invention Paragraph:
[0011] Efforts have been made to reduce drift by increasing droplet size, and to reduce volatalization by encapsulating droplets. The product chemistry of the active ingredients sought to be applied also limit the options on the type of product formulation and the manner of application. For example, the prior art teaches a method of liquid encapsulation of the active ingredient in a plastic or a polymer. U.S. Pat. No. 4,405,357, discloses a liquid encapsulation formulation of an active ingredient, sold under the trademark CLOMAZONE. Liquid encapsulation maintains the active ingredient in relatively large droplet form, reducing air-borne drift. In addition, the plastic or polymer outer coating effectively seals off the active ingredient, thereby reducing volatilization and its detrimental effects.

Summary of Invention Paragraph:
[0012] It would be theoretically advantageous to so encapsulate all of the active ingredients in agricultural chemicals, but drawbacks remain. First, the product chemistry of the active ingredients sought to be applied may limit the options on the type of product formulation and the manner of application. Certain active ingredients, individually or in combination with others, are not as suitable for liquid encapsulation as others. Thus, if two or more active ingredients are combined, liquid encapsulation may not reduce the volatilization of the active ingredients as effectively, as with a single active ingredient. An example of this interaction between two active ingredients is the combination of CLOMAZONE and a fertilizer. The fertilizer is a humectant, absorbing water out of the air, thereby increasing the volatility of the CLOMAZONE to the extent that liquid encapsulation is not very effective. Second, liquid encapsulation is quite expensive, so the cost/benefit analysis does not always favor liquid encapsulation as a desired product formulation.

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L11: Entry 2 of 10 File: PGPB Nov 15, 2001

DOCUMENT-IDENTIFIER: US 20010041659 A1
TITLE: Microencapsulated clomazone in the presence of fat and resin

Summary of Invention Paragraph:
[0001] The present invention relates generally to the field of herbicidal chemical compositions. In particular, the present invention relates to novel compositions of a known herbicidal compound, namely clomazone, designed to reduce clomazone's characteristic volatility, thereby reducing risk of unintended herbicidal activity when clomazone is applied.

Summary of Invention Paragraph:
[0004] Other microencapsulated formulations of clomazone exist that are intended to control the volatile nature of the herbicide. See, e.g., U.S. Pat. Nos. 5,597,780, 5,583,090, and 5,783,520. Unfortunately, these formulations do not provide optimum herbicidal efficacy when compared to commercially available clomazone 4 pound/gallon emulsifiable concentrate (4.0EC) formulation. Given the commercial value of clomazone, improved formulations are therefore needed.

Summary of Invention Paragraph:
[0010] The microcapsules of the present invention provide volatility reduction of about 20-90 percent as compared with clomazone prepared and applied from an emulsifiable concentrate, which is commercially available. The microcapsules of the present invention also provide increased herbicidal efficacy against certain weed species from about one to about four times that of known clomazone microcapsule formulations that are also commercially available. Thus, the practice of the present invention, among other things, enables one to apply clomazone to the appropriate locus for control of weeds in crops while eliminating or substantially diminishing the risk of clomazone injury to plant species located in areas adjacent thereto without the need to resort to expensive and time-consuming pre-plant incorporation or special application procedures.

Summary of Invention Paragraph:
[0018] Although the function of the fat used in the present invention is not fully elucidated, it is believed that the high degree of saturation of the fat used in the present invention, in addition to contributing to the lowering of the natural volatility of the clomazone, also contributes to the lowering of unintended and detrimental reactions that would likely occur between less-saturated solvents or fats and components of the wall of the microcapsule. These unintended and detrimental reactions are referred to as "fugitive reactions", and tend to disrupt the wall structure by forming strands that necessitate an additional filtration step in current clomazone formulation protocols. Generally, the fat used in the context of the present invention is a solid at room temperature, but dissolves in the presence of clomazone, which is a liquid. Accordingly, the clomazone acts as a solvent with the fat that is encased in the microcapsules of the present invention.

L11: Entry 3 of 10 File: USPT Aug 27, 2002

DOCUMENT-IDENTIFIER: US 6440902 B1
**** See image for Certificate of Correction ****
TITLE: Combination of two or more active ingredients using microencapsulated formulations

Brief Summary Text (2):
Microencapsulated formulations have been developed to answer issues concerning controlled release, volatility, or toxicity of certain active ingredients, thereby providing a means for using such ingredients. Formulations of this type that have been described for the herbicide clomazone (see U.S. Pat. No. 5,597,780), for example, are fragile when in concentrated form. The fragility of the microcapsules interferes with preparing concentrated compositions containing with a second component, because the preparation process tends to release the formerly microencapsulated active ingredient. The present invention describes methods and materials for making such two component concentrates. Also, hitherto microcapsules having two or more different active ingredients have not been described. The present invention provides methods and materials for making such two component microcapsules.

L11: Entry 4 of 10 File: USPT Apr 30, 2002

DOCUMENT-IDENTIFIER: US 6380133 B2
TITLE: Microencapsulated clomazone in the presence of fat and resin

Brief Summary Text (1):
The present invention relates generally to the field of herbicidal chemical compositions. In particular, the present invention relates to novel compositions of a known herbicidal compound, namely clomazone, designed to reduce clomazone's characteristic volatility, thereby reducing risk of unintended herbicidal activity when clomazone is applied.

Brief Summary Text (4):
Other microencapsulated formulations of clomazone exist that are intended to control the volatile nature of the herbicide. See, e.g., U.S. Pat. Nos. 5,597,780, 5,583,090, and 5,783,520. Unfortunately, these formulations do not provide optimum herbicidal efficacy when compared to commercially available clomazone 4 pound/gallon emulsifiable concentrate (4.0EC) formulation. Given the commercial value of clomazone, improved formulations are therefore needed.

Brief Summary Text (11):
The microcapsules of the present invention provide volatility reduction of about 20-90 percent as compared with clomazone prepared and applied from an emulsifiable concentrate, which is commercially available. The microcapsules of the present invention also provide increased herbicidal efficacy against certain weed species from about one to about four times that of known clomazone microcapsule formulations that are also commercially available. Thus, the practice of the present invention, among other things, enables one to apply clomazone to the appropriate locus for control of weeds in crops while eliminating or substantially diminishing the risk of clomazone injury to plant species located in areas adjacent thereto without the need to resort to expensive and time-consuming pre-plant incorporation or special application procedures.

Brief Summary Text (20):
Although the function of the fat used in the present invention is not fully elucidated, it is believed that the high degree of saturation of the fat used in the present invention, in addition to contributing to the lowering of the natural volatility of the clomazone, also contributes to the lowering of unintended and detrimental reactions that would likely occur between less-saturated solvents or fats and components of the wall of the microcapsule. These unintended and detrimental reactions are referred to as "fugitive reactions", and tend to disrupt the wall structure by forming strands that necessitate an additional filtration step in current clomazone formulation protocols. Generally, the fat used in the context of the present invention is a solid at room temperature, but dissolves in the presence of clomazone, which is a liquid. Accordingly, the clomazone acts as a solvent with the fat that is encased in the microcapsules of the present invention.

L11: Entry 5 of 10 File: USPT Apr 17, 2001

DOCUMENT-IDENTIFIER: US 6218339 B1
TITLE: Microencapsulated clomazone in the presence of fat and resin

Brief Summary Text (1):
The present invention relates generally to the field of herbicidal chemical compositions. In particular, the present invention relates to novel compositions of a known herbicidal compound, namely clomazone, designed to reduce clomazone's characteristic volatility, thereby reducing risk of unintended herbicidal activity when clomazone is applied.

Brief Summary Text (4):
Other microencapsulated formulations of clomazone exist that are intended to control the volatile nature of the herbicide. See, e.g., U.S. Pat. Nos. 5,597,780, 5,583,090, and 5,783,520. Unfortunately, these formulations do not provide optimum herbicidal efficacy when compared to commercially available clomazone 4 pound/gallon emulsifiable concentrate (4.0EC) formulation. Given the commercial value of clomazone, improved formulations are therefore needed.

Brief Summary Text (11):
The microcapsules of the present invention provide volatility reduction of about 20-90 percent as compared with clomazone prepared and applied from an emulsifiable concentrate, which is commercially available. The microcapsules of the present invention also provide increased herbicidal efficacy against certain weed species from about one to about four times that of known clomazone microcapsule formulations that are also commercially available. Thus, the practice of the present invention, among other things, enables one to apply clomazone to the appropriate locus for control of weeds in crops while eliminating or substantially diminishing the risk of clomazone injury to plant species located in areas adjacent thereto without the need to resort to expensive and time-consuming preplant incorporation or special application procedures.

Brief Summary Text (20):
Although the function of the fat used in the present invention is not fully elucidated, it is believed that the high degree of saturation of the fat used in the present invention, in addition to contributing to the lowering of the natural volatility of the clomazone, also contributes to the lowering of unintended and detrimental reactions that would likely occur between less-saturated solvents or fats and components of the wall of the microcapsule. These unintended and detrimental reactions are referred to as "fugitive reactions", and tend to disrupt the wall structure by forming strands that necessitate an additional filtration step in current clomazone formulation protocols. Generally, the fat used in the context of the present invention is a solid at room temperature, but dissolves in the presence of clomazone, which is a liquid. Accordingly, the clomazone acts as a solvent with the fat that is encased in the microcapsules of the present invention.

L11: Entry 6 of 10 File: USPT Jul 21, 1998

DOCUMENT-IDENTIFIER: US 5783520 A
TITLE: Microencapsulated herbicidal compositions comprising clomazone and edible oils

Brief Summary Text (12):
In accordance with the present invention there is provided an aqueous dispersion of microcapsules containing a herbicidally effective amount of clomazone dissolved in a suitable water-immiscible high boiling inert organic solvent. The boiling point of the solvent is, preferably, above 170.degree. C. The encapsulant is a porous condensate polymer of polyurea, polyamide or amide-urea copolymer. To provide acceptable volatility control without unacceptable sacrifice of herbicidal efficacy, the percentage of polymer comprising the microcapsules ranges from about 3 to about 20 by weight, preferably about 5 to about 15 by weight, and most preferably from about 5 to about 12 by weight. Also the percentage of solvent of the encapsulated material ranges from about 10 to about 50 by weight, preferably about 15 to 35 by weight, and most preferably from about 20 to about 35 by weight. The microcapsules of the present invention provide volatility reduction of about 20-90 percent as compared with clomazone prepared and applied from an emulsifiable concentrate which is commercially available at the present time. When the composition of the present invention is sprayed or otherwise applied to the surface of soil at the proper dilution for controlling vegetation, it has been found that by encapsulating clomazone dissolved in a suitable water-immiscible inert organic solvent as described and claimed herein, clomazone may be surface-applied directly by spraying and that one may achieve effective weed control in crops without significant damage to neighboring unsprayed vegetation due to vapor transfer of the herbicide. Thus, the practice of the present invention, among other things, enables one to surface apply clomazone to control weeds in crops while eliminating or substantially diminishing the risk of clomazone injury to plant species located in areas adjacent thereto without the need to resort to expensive and time-consuming preplant incorporation or special application procedures.

Drawing Description Text (2):
The accompanying drawing is a graph illustrating the percent volatility suppression improvement for microcapsules of the present invention for a range of percent of encapsulating polymer vis-a-vis a range of percent AE 700 solvent in which the encapsulated clomazone is dissolved.

Detailed Description Text (39):
To compare the percent volatility suppression improvement obtained by the practice of the present invention, various formulations of Example II were evaluated by the just-described test procedure against commercially obtained COMMAND.RTM. 4EC herbicide composed of 47 percent clomazone and 53 percent inerts formulated as an emulsifiable concentrate in side-by-side tests. The improvement in percent vapor transfer reduction (VTR) is seen in Table 3 below.

L11: Entry 8 of 10 File: USPT Aug 7, 1990

DOCUMENT-IDENTIFIER: US H000806 H
TITLE: Herbicidal clomazone compositions and methods of use tolerant to corn and other crops

Brief Summary Text (4):
The compound 2-[(2-chlorophenyl)methyl]-4,4-dimethyl-3-isoxazolidinone, hereinafter referred to by the common name "clomazone", is a potent herbicide as evidenced by its ability to control, for full growing seasons and at low application rates in soybean stands, a broad spectrum of grasses and broadleaf weeds that compete with soybeans. As with many herbicides, however, clomazone is not as quickly metabolized by some crops, trees and ornamentals as it is by soybeans. Such intolerance can result temporarily in unsightly yellowing or whitening of the plants unless precautions are taken to prevent or minimize exposure. These precautions include control of surface spraying to forestall drift to adjacent fields planted with low tolerance crops, incorporation into soil during tillage to avoid volatilization due to high temperature and/or moisture, rotation to sensitive crops after specified periods of time following application of clomazone, and thorough cleaning of spray tanks to avoid contaminating other chemicals.

Detailed Description Text (7):
Emulsifiable concentrates are homogeneous liquid or paste compositions dispersible in water or other dispersant, and may consist entirely of a compound of this invention with a liquid or solid emulsifying agent, or may also contain an agriculturally acceptable liquid carrier, such as xylene, heavy aromatic naphthas, isophorone and other non-volatile and other non-volatile organic solvents. For example, a useful emulsifiable concentrate formulation, designated "4EC' because it contains four pounds of active ingredient per gallon of concentrate (0.479 kg/liter), contains 53.01 parts of clomazone, 6.0 parts of a blend of alkylnaphthalenesulfonate and polyoxyethylene ethers and emulsifiers, 1.0 part of epoxidized soybean oil as stabilizer, and as solvent 39.99 parts of petroleum distillate having a high flash-point.

L11: Entry 9 of 10 File: USPT Apr 18, 1989

DOCUMENT-IDENTIFIER: US 4822401 A
TITLE: Safening of herbicidal clomazone applications with organophosphorus compounds

Detailed Description Text (9):
Emulsifiable concentrates are homogeneous liquid or paste compositions dispersible in water or other dispersant, and may consist entirely of a compound of this invention with a liquid or solid emulsifying agent, or may also contain an agriculturally acceptable liquid carrier, such as zylene, heavy aromatic naphthas, isophorone and other non-volatile organic solvents. For example, a useful emulsifiable concentrate formulation, designated "4EC" because it contains four pounds of active ingredient per gallon of concentrate (0.479 kg/liter), contains 53.01 parts of clomazone and/or safener, 6.0 parts of a blend of alkyl-naphthalenesulfonate and polyoxyethylene ethers and emulsifiers, 1.0 part of epoxidized soybean oil as stabilizer, and as solvent 39.99 parts of petroleum distillate having a high flash-point.

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L11: Entry 10 of 10 File: USPT Sep 20, 1983

DOCUMENT-IDENTIFIER: US 4405357 A
TITLE: Herbicidal 3-isoxazolidinones and hydroxamic acids

Detailed Description Text (282):
Emulsifiable concentrates are homogeneous liquid or paste compositions dispersible in water or other dispersant, and may consist entirely of a compound of this invention with a liquid or solid emulsifying agent, or may also contain an agriculturally acceptable liquid carrier, such as xylene, heavy aromatic naphthas, isophorone and other non-volatile organic solvents. For example, a useful emulsifiable concentrate formulation, designated "4EC" because it contains four pounds of active ingredient per gallon of concentrate (0.479 kg/liter), contains 53.01 parts of 2-(2-chlorophenyl)methyl-4,4-dimethyl-3-isoxazolidinone, 6.0 parts of a blend of alkylnaphthalenesulfonate and polyoxyethylene ethers as emulsifiers, 1.0 part of epoxidized soybean oil as stabilizer, and as solvent 39.99 parts of petroleum distillate having a high flash-point.

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☐ 1. Document ID: US 5597780 A

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L12: Entry 1 of 2 File: USPT Jan 28, 1997

US-PAT-NO: 5597780
DOCUMENT-IDENTIFIER: US 5597780 A

TITLE: Low volatility formulations of microencapsulated clomazone

DATE-ISSUED: January 28, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lee; Fui-Tseng H.	Princeton	NJ		
Nicholson; Paul	Trenton	NJ		

US-CL-CURRENT: 504/271; 504/359

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 2. Document ID: ES 2191067 T3, WO 9614743 A1, AU 9641613 A, ZA 9509724 A, US 5597780 A, EP 792100 A1, BR 9509694 A, CZ 9701416 A3, TW 321585 A, MX 9703575 A1, HU 77708 T, KR 97706728 A, JP 10509709 W, AU 696760 B, AU 9926990 A, IL 115975 A, AU 734106 B, EP 792100 B1, CN 1162902 A, DE 69529471 E, KR 357844 B, CA 2205440 C

L12: Entry 2 of 2 File: DWPI Sep 1, 2003

DERWENT-ACC-NO: 1996-259473
DERWENT-WEEK: 200365

TITLE: Prepn. of improved herbicidal clomazone compsns. - with reduced volatility and reduced movement from target area

INVENTOR: LEE, F H; NICHOLSON, P ; LEE, F T H ; LEE, F

PRIORITY-DATA: 1995US-0531499 (September 21, 1995), 1994US-0340699 (November 16, 1994)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC

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734106 B INT-CL (IPC): A01 N 0/00; A01 N 25/04; A01 N 25/28; A01 N 43/48; A01 N 43/72; A01 N 43/80; C07 D 0/00

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

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